

Module specification

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Module Code	AUR5A8
Module Title	Infrastructure and the Environment
Level	5
Credit value	20
Faculty	Faculty of Arts, Computing & Engineering
HECoS Code	100154
Cost Code	GABE

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
BEng (Hons) Civil Engineering Degree Apprenticeship	Option
BSc Civil Engineering Studies	Option

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	30 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	0 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	30 hrs
Placement / work-based learning	0 hrs
Guided independent study	170 hrs
Module duration (total hours)	200 hrs

For office use only	
Initial approval date	3 rd July 2024
With effect from date	September 2024
Date and details of revision	
Version number	1



Module aims

This module aims to provide an opportunity for students to develop knowledge and skills to consider sustainable transport modes, Inclusive Design and environmental considerations for vehicular and non-vehicular in connection with infrastructure schemes.

It also aims to provide students with an opportunity to consider the Design Manual for Roads and Bridges in respect on current design standards, including the understanding of

Alignments, junctions, pavement design aspects and emerging regional and national initiatives and developments in public transport.

Students will be provided with an overview of traffic and transportation themes and their impact on Health and the Environment.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Select and analyse appropriate data and suitable sources to define a problem, identify constraints and provide sustainable solutions to traffic and transportation issues.
2	Produce solutions for pavement design and material specification, utilising appropriate Design Standards, considering management principles and risk.
3	Apply knowledge of technical literature, relevant legislation, process, and techniques in relation to emerging regional and national initiatives, via a negotiated traffic and transportation case study, ensuring consideration of the design brief, cost, health, safety, programme, environment, and the United Nation Sustainability Goals.

Assessment

Indicative Assessment Tasks:

Assessment 1 will comprise of coursework which will address a series of tasks relating to traffic and transportation problems. (indicative word count 2,000 words)

Assessment 2 will comprise a Group presentation designed to offer a preliminary inclusive active travel design solution to an engineering problem, to be delivered via a 15 mins presentation and 5 mins Q & A.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1 & 2	Coursework	50
2	3	Presentation	50

Derogations

None

Learning and Teaching Strategies

The module will be presented to students through planned lecture series and tutorials. An active and inclusive approach is used to engage students in the topics and will involve individual, group work and flipped learning experiences aligned to the university's Active Learning Framework (ALF). The approach offers students a flexible and adaptive learning experience that can accommodate a range of options that includes both on campus learning and remote learning where appropriate.

The Moodle VLE and other on-line materials and resources will be available to support learning. ALF offers a balance between the classroom elements and digitally enabled activity incorporating flexible and accessible resources and flexible and accessible feedback to support learning.

Guest lecturers with specific topic expertise will be encouraged, from within the University or through the professional network related to the Built Environment. Site visits, guest lectures and case studies will be used where possible to enhance learning.

Tutorials – Close interaction with students ensuring that the work presented during lectures has been understood, with specific help being given to overcome any learning problems, should they occur.

Indicative Syllabus Outline

Highway Law and Highway Authority Function.

Traffic Surveys

Collison Analysis.

Traffic Modelling.

Traffic management.

Inclusive Design.

Road safety

Principles of Street Design for All.

Design for Cycling and Walking.

Design Speed/Design traffic.

Pavement Design and Low Carbon materials.

Earthworks.

Public Transport systems.

Connected and Autonomous vehicles/ Electrification.

Public engagement.

Maintaining infrastructure.

Indicative Bibliography:

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads

Rogers, M. Enright, B. (2016), *Highway Engineering*, 3rd Edition. Chichester: Wiley & Sons.

Other indicative reading

Design Manual for Roads and Bridges HMSO.

Chartered Institute of Architectural Technologists www.ciat.org.uk

Chartered Institute of Building www.ciob.org.uk

Ordnance Survey www.ordnancesurvey.co.uk/

Royal Institution of Chartered Surveyors www.rics.org

Institution of Civil Engineers www.ice.org.uk

Royal Institute of British Architects www.architecture.com

Designing Buildings Wiki www.designingbuildings.co.uk

Institution of Structural Engineers (www.istructe.org.uk)

Other sources:

IHS Database www.ihsti.com

<https://www.gov.uk/government/publications/cycle-infrastructure-design-ltn-120>

Manual for Streets HMSO.